Navigating Pediatric Concussion Management as an Interdisciplinary Team

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Video

Initial Evaluation

- 15 -1/2 year old right-handed girl
- 3 weeks prior to 1st evaluation at the Concussion Center
- Playing sweeper position in a high school soccer game. Just before half-time she attempted to “head” the ball kicked from long distance; instead the ball hit the side of her face at high velocity; head propelled backwards and to the side.
- No immediate neck pain, LOC, seizure, amnesia or concussion symptoms. No sideline concussion evaluation. Continued to play game to the end; left on bus with teammates; home; ate dinner; went to sleep
- Over the next 48-72 hours: headache, dizziness, confusion, difficulty concentrating, poor memory, photophobia, phonophobia, insomnia
- Continued sports training/exercise and full time academics

Initial Evaluation (cont.)

- Daily fronto-temporal “squeezing” 5-7/10 headache with +/- photophobia. No nausea, vomiting, visual scotoma, diplopia, numbness, tingling, weakness, ataxia, tinnitus or vertigo
- Diagnosis of concussion made by PCP 1 week after injury
- Restricted to ½-day school, no physical activity and no sports by PCP
- All concussion symptoms worsened with reading, lights, hand-held devices, computer screen, TV and exercise; improved with rest.
- Symptoms were affecting her academics significantly
- HA did not awaken her from sleep

Initial Evaluation (cont.)

- Medication: ibuprofen 200 mg TID for 3 weeks
- Allergy: none
- ROS: no tinnitus, hearing loss, anosmia, loss of taste, ADHD, conduct disorder, depression, anxiety, panic attacks or hallucinations
- Academics: 10th grade , honors
- No prior concussions or head injury.
- Denied tobacco, ETOH, marijuana, drugs; occasional caffeine beverages
- FH: chronic headache in mother
- On day of evaluation 14/26 concussion symptoms; symptom score 39/156 (neurologic, cognitive, vision, sleep, emotional/behavioral)
- Symptoms had improved slightly over the last 3 weeks

Initial Evaluation (cont.)

- **Physical Examination**: Normal; full ROM of neck without pain; no occipital/trapezius muscle spasm or trigger point
- **MS**: normal immediate and remote memory 5 words; normal concentration 2-5 digits backwards; months of year reverse order; can subtract serial 7's from 100 to 65. Can read standard paragraph with no errors.
- **CN**: normal, including smell, hearing to finger rub and near-card vision; near point convergence: 10 cm; VMS/VOR: normal
- **Motor**: normal strength; DTRs 2+; Babinski absent
- **Gait**: normal tandem; Romberg negative
- **BESS**: 12/30; errors on single stance, tandem stance with eyes closed, hard surface.
- **Sensory**: normal; including position-sense and graphesthesia

Assessment

- Acute cerebral concussion without LOC
- Early Post-concussion Syndrome (PCS)
- Daily Tension-type Post-Traumatic Headache (PTH)
- Memory and Concentration Deficits
- Poor Balance
- Photo- and Phonophobia
- Anxiety
- ? Analgesic Overuse (medication overuse syndrome-MOS)

Initial Plan

- “Red Flag Warning” list given: go to ED!!
- “Second Impact” caution given: go to ED!
- Notify PCP, Concussion Center ASAP if new or worsening concussion symptoms
- Home activity: rest for 1 week : no exercise/sports; limit reading, hand-held devices, computer
- Academic accommodations: no school for 1 week
- Physical restrictions: no physical exercise for 1 week; no sports until medical clearance
- Avoid “risky behaviors” (heights, bike riding, etc.)
- Reduce analgesic to no more than 3 times/week
- Magnesium gluconate 500mg, Riboflavin 400 mg, CoQ10 100 mg

Video

Follow Up 1 Week Later (1 month after concussion):

- Significant improvement in all symptoms; 8/26 concussion symptoms; symptom score: 8/156; headaches 4-6/10 severity; NOT daily, mainly in school
- BESS:10/30
- PLAN

  Academics: ½ day, increase as tolerated; no exams or quizzes; extra time; frequent breaks; quiet place; early dismissal if needed; avoid band, music; resource room, tutor; limit screen time

- Physical activity: no PE or sports; light aerobic exercise- walk, stationary bike 15 min

FOLLOW Up 4 Weeks Later (2 months after concussion):

- No improvement in symptoms; 15/26 concussion symptoms; symptom score: 22/156; headaches 4-6/10 severity; occur only in school (noise, light, reading); school had been advanced to full day taking frequent breaks
- BESS: 10/30
- MODSOM score: 5

• PLAN

Academics: full day; no exams or quizzes, gradual increase to 1 per day at most; extra time; frequent breaks; quiet place; early dismissal if needed; no band, music; resource room, tutor; limit screen time; sunglasses

Physical activity: no PE or sports; advance to moderate aerobic exercise-jogging, swimming, yoga

Plan (cont.)

- Occupational Therapy (OT) for oculomotor evaluation and therapy; King-Devick; CISS
- Speech and Language (SLP) for cognitive evaluation and therapy;
- Physical Therapy (PT) for balance/coordination assessment and treatment
- -ImPACT score 2 months after concussion: visuomotor 16% (low average), reaction time 30% (average), verbal memory composite 40% (average); visual memory composite 60% (high average)
- -Brain MRI with NeuroQuant analysis 7 months after concussion : normal
- -NOTE: 5 months after her concussion she was hit in the head by a soccer ball which ricocheted off the wall after being kicked by a teammate during indoor practice. Headaches increased for 2 days; no other concussion symptoms. One week break from therapies.

Video

Occupational Therapy's Role

- **Occupational Therapists address occupational performance and visual dysfunction associated with mTBI/concussion**
- **Visual symptoms can impact a student's ability to perform certain school-related activities:**

  Reading speed and accuracy

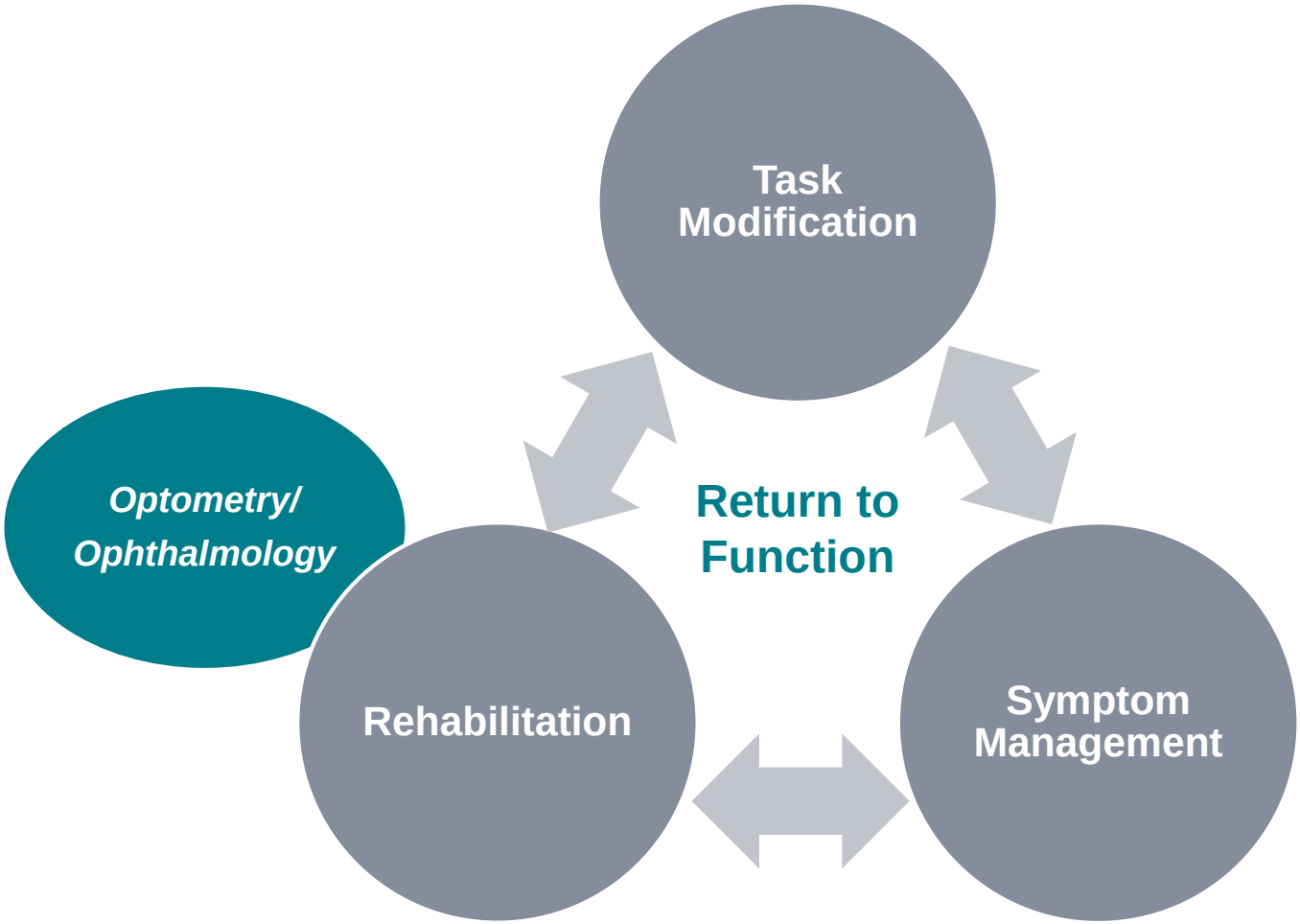
  Ability to successfully copy from the board

  Tolerance of screens (Smart Board, PowerPoint, Projectors, iPad, computers, TV)

  Writing in a straight line

  Ability to complete class work/homework/tests without an increase in symptoms

Treatment Approach



OT Evaluation

Screening/Assessment Tools	Score
Rivermead Post Concussion Symptom Survey	RPQ-3= 3 (physical symptoms) RPQ-13 =15 (somatic symptoms)
King-Devick Test of saccadic eye movement	1 minute and 7 S No errors (fail > 57 S, maximum 1 error)
Trail Making Test	21.08 S Norm =22.93 S SD +/- 6.87 S
Lafayette Groove Pegboard	54.96 S Norm= 66.05 S SD +/- 10.40 S
Dynavision Training *program A)	1.09 S reaction time
Convergence Insufficiency Symptom Survey	33 (score of 16 or higher is suggestive of convergence insufficiency)

Vision Screen

- **History**: no significant eye health issues; optometry evaluation 3 months ago
- **Glasses**: yes for nearsightedness; has contacts, but hasn't been wearing
- **Symptoms-**

  Headache: yes
  Eye Strain or Discomfort: yes (associated with light)
  Double/blurry vision: no
  Moves head back and forth to improve focus: yes
  Closes one eye to improve focus: no
  Frequently loses place when reading: yes
  Difficulty concentrating/attending to visual stimuli: yes
  Avoidance of near distance work: yes
- **Ocular Motility-**

  Ocular range of motion: intact
  Fixation: able to maintain fixation for 10 seconds, but frequent blinking noted
  Saccades: Vertical – accurate with adequate speed Horizontal- accurate with adequate speed (reports discomfort)
  Smooth pursuits: H pattern tested – intact with adequate eye-head dissociation, but reports discomfort and frequent blinking noted
- **Binocular Vision**

  Alignment: Alternate Cover - (-) for phorias Cover/Uncover- (-) for tropias
  Convergence: Near point of convergence (NPC) at 4"
- **Fields**: intact
- **Focusing Flexibility-** reports difficulty with note taking

Functional Impairments

- Decreased reading tolerance (30 minutes)
- Decreased screen tolerance (30 minutes)
- Decreased tolerance to note taking (30 minutes)
- Decreased tolerance to complex visual stimuli (increased headache when looking at busy forms/school material)
- Decreased tolerance to visually demanding environments (i.e cafeteria and mall)
- Decreased tolerance to fluorescent lights

Goals

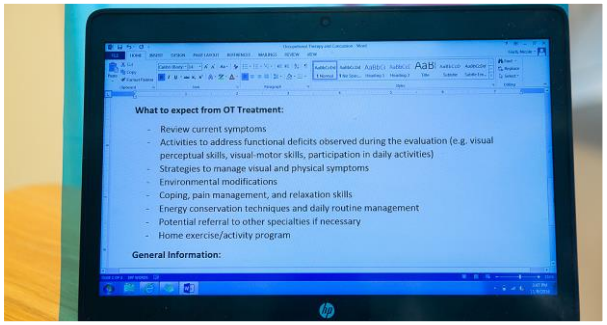
- Increased reading tolerance to 60 minutes with < 2 point symptom increase
- Increased screen tolerance to 60 minutes with < 2 point symptom increase
- Reduce CISS score to 21 less
- Complete Dynavision reaction to < .85 S
- Increase tolerance to visually demanding/community level environments

Treatment Plan

- Symptom Management
  - To use graded approach to increasing tolerance to visually demanding tasks while remaining in the subthreshold of symptom increase
  - To implement preventative and restorative breaks into daily routine
- Task Modification
  - To address sensitivities to light/screens/visual complex material and high contrast material
  - To reduce visual stress within daily routine and school related tasks and community environments
- Rehabilitation
  - Visual activities to increase ocular motor control, visual processing speed and reaction speed, visual-vestibular integration tasks, tolerance to near <> transitions

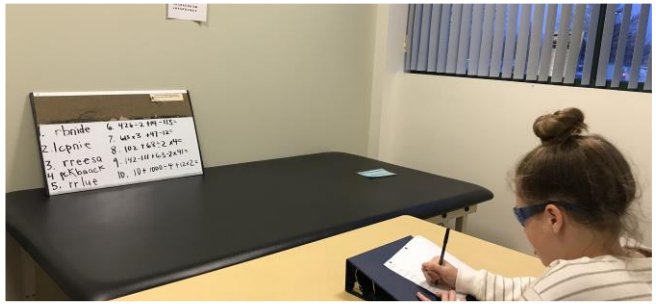
Interventions-Modifications

- Reading
  - Large font
  - Use of line guide
  - Printing material of blue paper or use of blue filter
- Computer
  - Use of blue filter
  - Changing font color
  - Large font
  - Alternate reading on paper and screens
- Phone
  - Reduce white point
  - Color lens
  - Large font
- Visually Complex Material/Environment
  - Blocking strategies
  - Graph paper for math assignments
  - Blue tinted lenses



Interventions-Therapeutic Activities

- Simulated note taking tasks
- Visual activities to work on saccades/visual processing and visual endurance
- Dynavision to work on ocular motor control, peripheral awareness and visual processing
- Visual-vestibular integrations tasks
- Scanning sheets



Screening/Assessment Tools	Evaluation Status	Discharge Status
Rivermead Post Concussion Symptom Survey	RPQ-3= 3 (physical symptoms) RPQ-13 =15 (somatic symptoms)	RPQ-3= 2 (physical symptoms) RPQ-13 =8 (somatic symptoms)
King-Devick Test of saccadic eye movement	1 minute and 7 S No errors (fail > 52 S)	51.73 S no errors
Trail Making Test	21.08 S Norm =22.93 S SD +/- 6.87	NT due within normal range on Eval
Lafayette Groove Pegboard	54.96 S Norm= 66.05 S SD +/- 10.40	NT due within normal range on Eval
Dynavision Training *program A)	1.09 S reaction time	.78 S reaction time
Convergence Insufficiency Symptom Survey	33 (score of 16 or higher is suggestive of convergence insufficiency)	19 (score of 16 or higher is suggestive of convergence insufficiency)

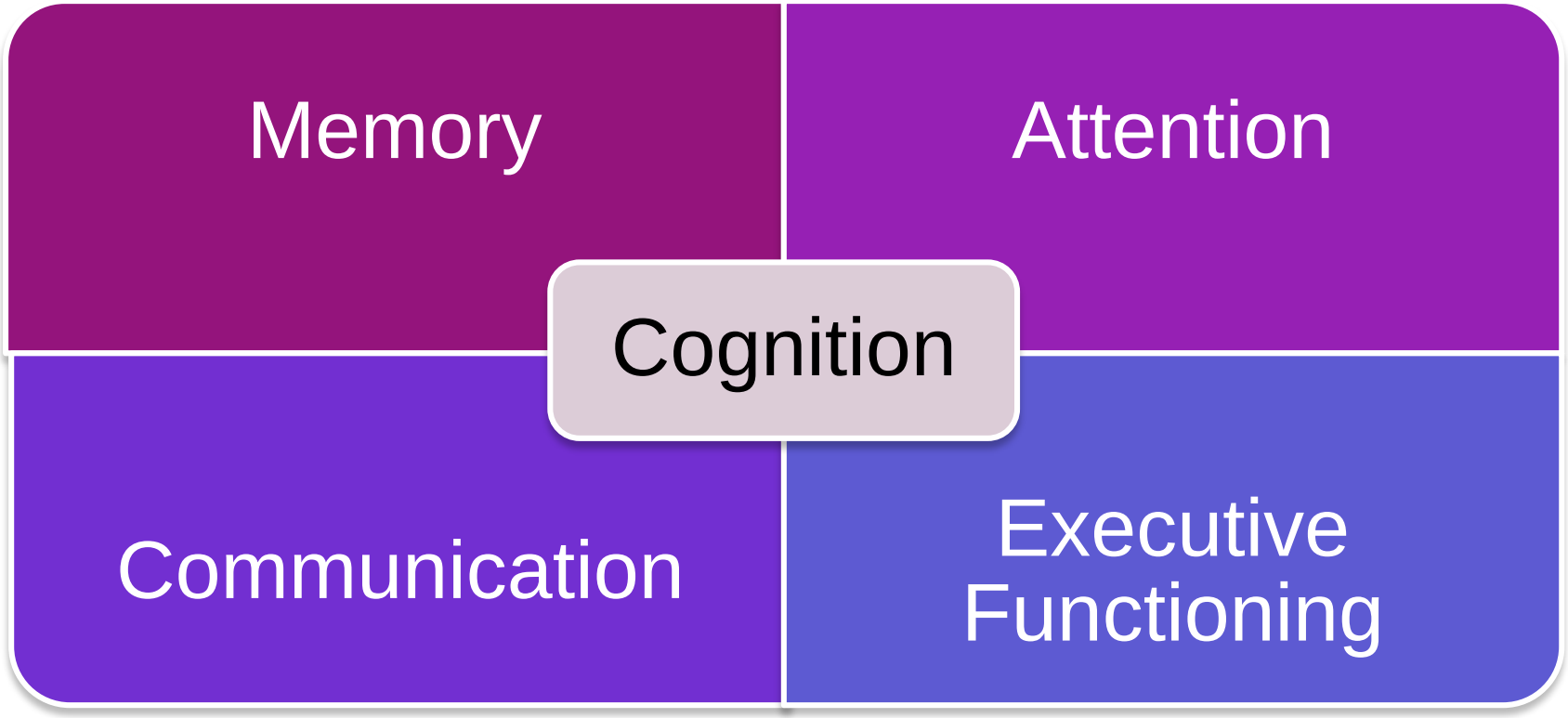
Functional Progress and Plan

- Goals
  - Increased reading tolerance to 60 minutes with < 2 point symptom increase MET
  - Increased screen tolerance to 60 minutes with < 2 point symptom increase MET
  - Reduce CISS score to 21 less MET
  - Complete Dynavision reaction to < .85 S MET
  - Increase tolerance to visually demanding/community level environments MET
- Plan:

  Transition to Physical Therapy to address vestibular issues

Video

Speech Language Pathologist's Role



Early SLP Involvement for Middle and High School Age Children

- Identify cognitive-communication needs
- Provide direct education on symptom management, self-awareness and self-monitoring progress
- Assist with accommodations, creating and implementing 504 plans, and developing return-to-learn timeframes
- Facilitate inclusion and self-advocacy to participate in discussions about rehabilitation decisions
- Early cognitive support can help prevent barriers interfering with skilled intervention and reduce obstacles with home programming and adherence

(Brown et al., 2019)

CDC Return to Learn Recommendations

- Education provided by medical and school based teams to student and family counseling regarding:
  - -gradual increase of duration and intensity of academic activities
  - -goal of increasing participation without symptom exacerbation
- Careful planning regarding symptoms that affect learning and performance (headaches, fatigue, etc.)
- Collaborative monitoring of symptoms and academics by student, family, health care professionals, and school teams
- Gradual adjustments of educational supports to maintain an academic workload without worsening symptom
- Individualized protocols based on severity of PCS symptoms

(JAMA Pediatrics, 2018)

Academic Stressors on Recovery

- Lower than usual grades
- Falling behind academically despite working harder
- Negative feelings because of cognitive difficulties (i.e., “feeling stupid”)
- Struggling to “look normal”
- Needing help but not wanting to stand out or be perceived as getting special treatment
- Attitudes of teachers and peers thinking the student is not injured
- Social isolation due to decreased participation in academic and social activities

(Baker J, et al., 2014)

Cognitive Overexertion on Recovery

- Prolong recovery
- Hinder academic attendance
- Academic decline
- Extended recovery time may necessitate more intensive accommodations, modifications, or specific school-based interventions
- Negatively impact acceptance to advanced classes, honor societies, scholarships, college, etc.
- Extend time to graduation
- Post-high school outcomes

(Dachtyl & Morales, 2017)

Cognitive-Communication Assessment

Standardized Assessments:

- Woodcock Johnson IV (WJIV)
- Test of Memory and Learning - Second Edition (TOMAL-2)
- Functional Assessment of Verbal Reasoning and Executive Strategies-Student Version (FAVRES-S)
- Behavioural Assessment of the Dysexecutive Syndrome (BADS)

Non-Standardized Diagnostic Measures:

- Deductive Reasoning Skills
- Sequencing Tasks
- Reading Tasks
- External Memory Aids
- Approaches to formal Diagnostic Assessments

Initial Assessment

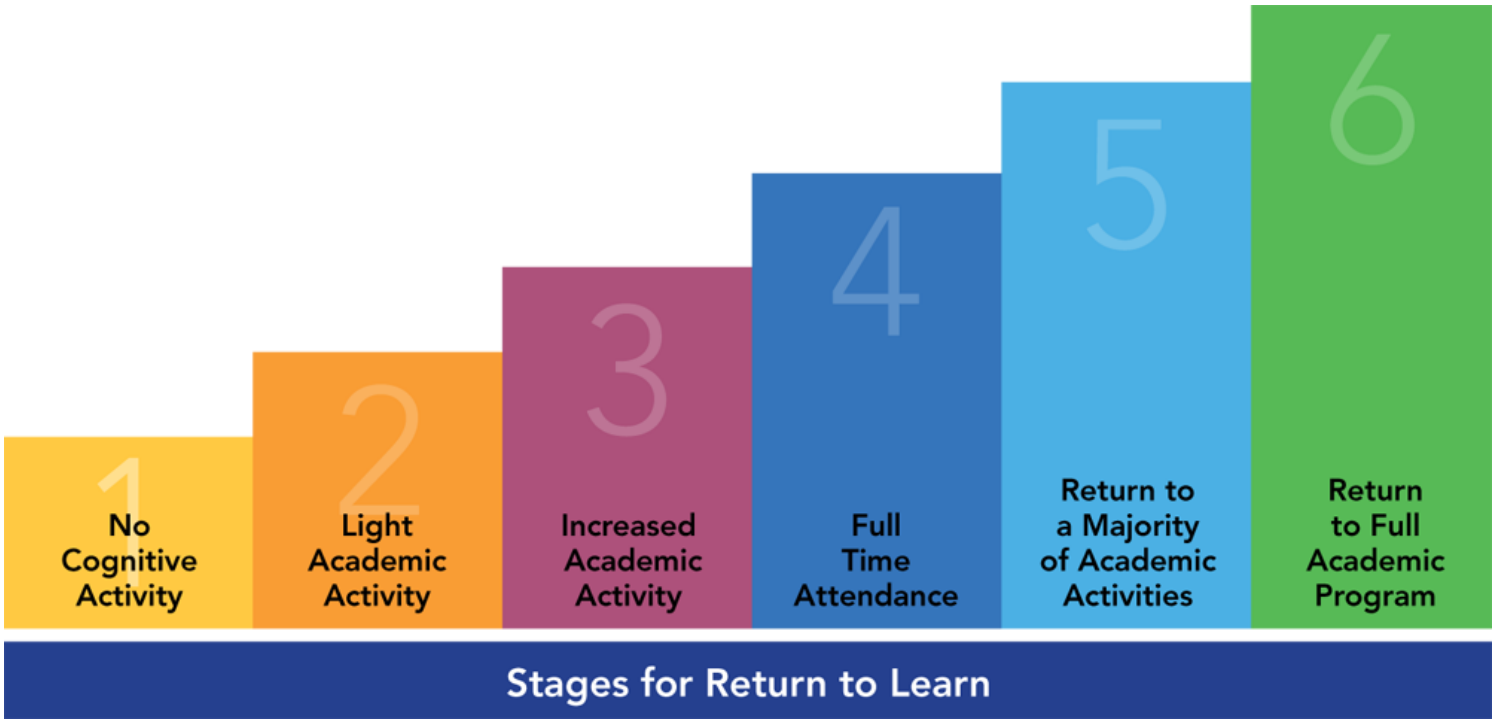
WJ IV TCA/TOL Assessment Tools	Standard Score	Performance Range
Oral Vocabulary	95	Average
Verbal Attention	109	Average
Story Recall	98	Average
Visual-Auditory Learning	91	Average
Rapid Picture Naming	98	Average
Understanding Directions	104	Average
Retrieval Fluency	106	Average

Initial Assessment

Functional Assessment of Verbal Reasoning and Executive Strategies
Student Version

	Raw Score	Standard Score	Performance
Total Test Accuracy	20	110	Average
Total Test Rationale	**17**	**87**	**Low Average**
Total Test Time	**47**	**97**	**Low Average**
Total Reasoning Subskills	106	106	Average
Task 1- Planning an Event			
-Accuracy	5	105	Average
-Rationale	5	105	Average
-Time	**7:37**	**87**	**Low Average**
-Reasoning Subskills	30	124	High Average
Task 2- Scheduling			
-Accuracy	5	108	Average
-Rationale	**4**	**93**	**Low Average**
-Time	15:27	103	Average
-Reasoning Subskills	**22**	**82**	**Low Average**
Task 3- Making a Decision			
-Accuracy	5	104	Average
-Rationale	5	107	Average
-Time	**8:46**	**97**	**Low Average**
-Reasoning Subskills	**22**	**90**	**Low Average**
Task 4- Building a Case			
-Accuracy	5	105	Average
-Rationale	3	107	Average
-Time	**15:15**	**95**	**Low Average**
-Reasoning Subskills	32	118	High Average

Gradual Return To Learn



Transitioning to the Academic Setting

- Encourage students to get back into school when they demonstrate readiness
- Listening/observation days
- Reinforce the importance of taking breaks in a designated, quiet location
- Prioritize essential work
- Decrease volume of workload
- Spend more time and energy on core, cumulative classes
- Recommend tutoring as needed for more challenging classes

Return to Learn: Where to Start?

- Review current academic schedule and course load

- Identify the following:
  - -Academic stressors
  - -Pending make-up work
  - -Current accommodations through MD recommendations, *504 plan, IEP*
  - -Contact person in the academic setting

- Establish academic accommodations to support learning based on symptom profile, assessment results, and clinical judgement

Academic Profile

- **Enrolled in 10th grade**
- **Attending school full time with breaks during the day**
- **Block scheduled classes:**
  - Psychology
  - AP Human Geography
  - Honors coursework
  - Study
- **Missed academic work:**
  - 16 tasks (quizzes, tests, mid-terms, labs, etc.)
- **Reported functional difficulties:**
  - Reduced concentration in school
  - Forgetting information listened to during conversation
  - Repeating herself in conversation
  - Difficulty taking notes while listening to her teachers
  - Reduced endurance for back-to-back tasks

Treatment Plan and Goals

- PCS neurorehabilitation education and self-advocacy strategy training
- Perform sequential cognitive tasks with minimal symptom exacerbation by working at a sub-threshold level (2 point change on the Wong-Baker FACES pain scale)
- Divide attention for complex tasks in a complex environment
- Demonstrate organized recall for paragraph level stimuli and multi-step directions
- Plan, organize, and execute multi-part tasks
- Create a concrete action plan and schedule for managing make-up work and new learning

Discharge Testing

BADS	Zoo Map Version 1	Zoo Map Version 2
Time	2:59	0:39
Sequence Score	8/8	8/8
Zoo Map Raw Score	**16/16**	
Zoo Map Profile Score	**4/4**	

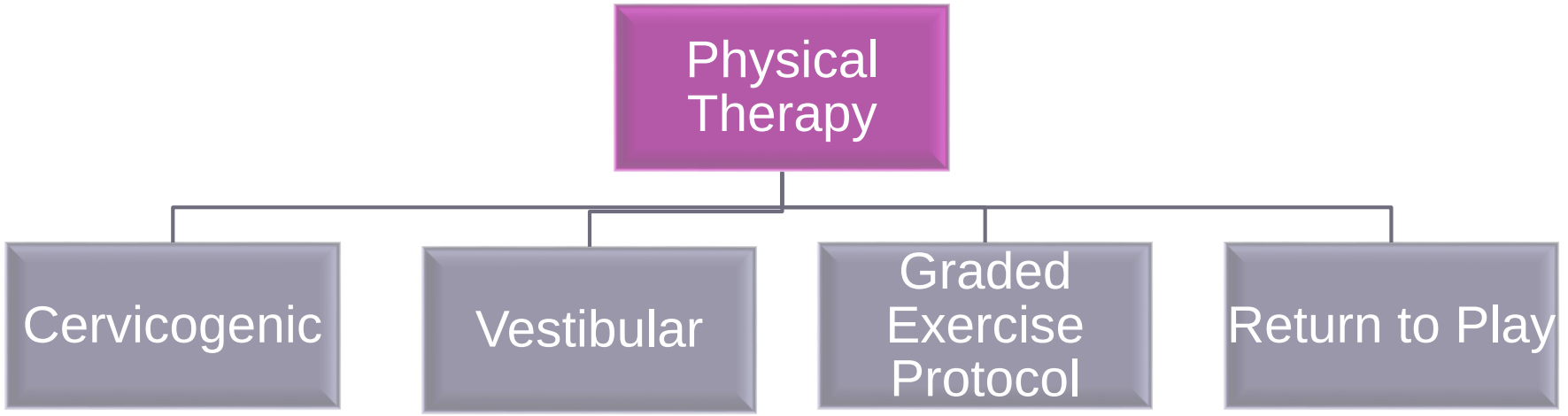
	Key Search Test
Time	0:39
Raw Score	**15/16**
Profile Score	**4/4**

Functional Progress and Discharge

- Trace headache limited to the school setting when concentrating
- Independence of trained strategies reported by patient and caregiver
- Reduction of accommodations
- Continued use of trained strategies as needed
  - Notetaking for complex coursework
  - Planner to manage schedule, tests, etc.
- Discharge after 14 skilled SLP intervention sessions

Video

Physical Therapy's Role



PT Evaluation/ Examination

- **Cervicogenic**
  - ROM
  - Strength
    - Deep Neck Flexor Endurance Test
    - Postural and UE strength
  - Mobility
  - Ligament integrity
    - Alar Ligament
    - Transverse Ligament
  - Joint Position Error
- **Vestibular**
  - Balance
    - Static
      - BESS Test
    - Dynamic
      - FGA, DGI etc.
  - Head/Eye Coordination
    - VOMS Test
  - BPPV
    - Dix Hallpike
    - Roll Test
- **Exercise Tolerance**
  - Buffalo Treadmill Test

PT Evaluation/ Examination

Cervical Assessment

- ROM: WNL
- Strength:
  - DNF Endurance Test: 17 Seconds
  - Postural Strength: >/= 4/5
- Mobility: WNL
- Ligament integrity
  - Alar Ligament: (-)
  - Transverse Ligament: (-)
- Proprioception
  - JPE Test: WNL

PT Evaluation/ Examination

VOMS Test

Vestibular/Occulomotor	Headache	Dizziness	Nausea	Fogginess	Comments
Baseline	0/10	0/10	0/10	0/10	
Smooth Pursuits	0/10	0/10	0/10	0/10	
Saccades- Horizontal	0/10	0/10	0/10	0/10	
Saccades- Vertical	0/10	0/10	0/10	0/10	
Convergence					1: 9 cm 2: 8 cm 3: 9 cm
VOR- Horizontal	0/10	2/10	0/10	0/10	
VOR- Vertical	0/10	0/10	0/10	0/10	
Visual Motion Sensitivity	0/10	2/10	0/10	0/10	

PT Evaluation/ Examination

BESS Test

Position	Firm Surface	Foam Surface
Double Leg Stance	0	0
SLS (on non dominate foot)	0	4
Tandem Stance (non dominate foot in rear)	0	5
Total Errors	0	9
Total BESS Score: 9/60		

PT Evaluation/ Examination

Buffalo Treadmill Test

Time	Incline	Headache	Diziness	Nausea	Fogginess	RPE	HR
Baseline		0/10	0/10	0/10	0/10	N/A	87 bpm
1 min	0 %	0/10	0/10	0/10	0/10	N/A	98 bpm
2 min	1 %	1/10	1/10	0/10	0/10	N/A	117 bpm
3 min	2 %	1/10	2/10	0/10	0/10	N/A	127 bpm
4 MIN	3 %	1/10	3/10	0/10	0/10	N/A	138 bpm

PT Evaluation/ Examination

Impairments

- Headaches
- Dizziness
- Activity/ exercise intolerance

Functional Limitations

- Walking on treadmill
- Riding in the car
- Reading
- Unable to run/jump or participate in age appropriate recreational activities

PT Evaluation/ Examination

Short Term Goals (to be achieved in 6-8 visits)

- Patient will be increase DNF Endurance test to >/= 20 sec
- Decrease dizziness to </= 1/10 during VOMs test for VOR and motion sensitivity testing and
- Patient will be able to walk on treadmill at >/= 5% incline at 3.2 mph without any increased Sx's

Long Term Goals (to be achieved in 14-16 visits)

- Patient will complete Buffalo Treadmill test and graded exercise program without any increase in sx's to permit return to soccer
- Patient will be able to complete the VOMs Test as prescribed with no sx's to permit sx free ADL's
- Patient will be independent with HEP for self management of symptoms and to further progress gains made in therapy

Plan:
Perform gaze stabilization training, motion sensitivity habituation and a graded exercise program.

Treatment

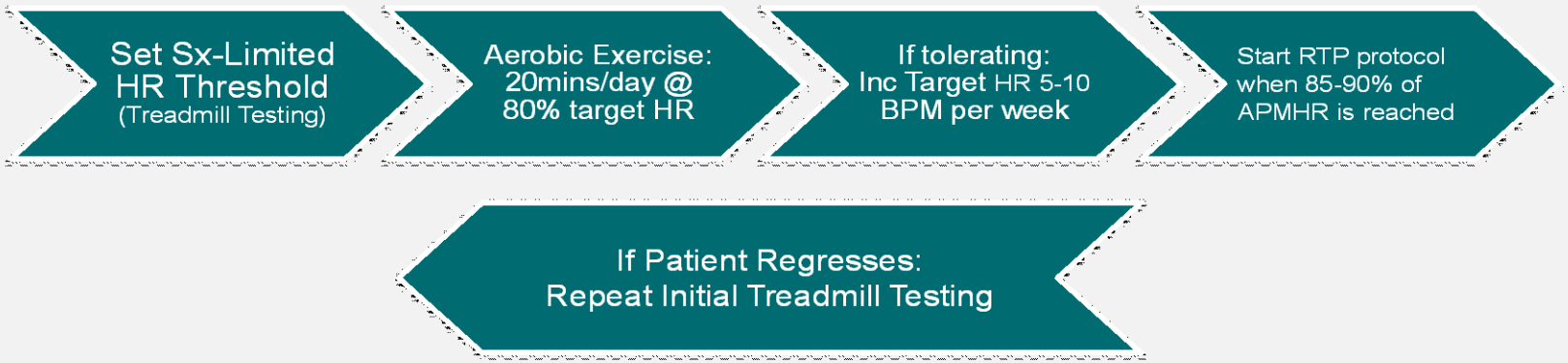
Vestibulo/ocular and Balance

- Gaze stability exercises
- Motion Sensitivity exercises
- Position changes
- Compliant→ non compliant surfaces for added challenge with vestibule/ocular exercises and streng.th training

Treatment

Conditioning Exercise:

Programming Graded Exercise



Treatment

Buffalo Treadmill Test: post set back

Time	Incline	Headache	Diziness	Nausea	Fogginess	RPE	HR
Baseline		0/10	0/10	0/10	0/10	N/A	84 bpm
1 min	0 %	2/10	0/10	0/10	0/10	N/A	96 bpm
2 min	1 %	2/10	0/10	0/10	0/10	N/A	114 bpm
3 min	2 %	2/10	1/10	0/10	0/10	N/A	123 bpm
4 min	3 %	2/10	1/10	0/10	0/10	N/A	134 bpm
5 min	4 %	2/10	1/10	0/10	0/10	N/A	145 bpm
6 min	5 %	3/10	1/10	0/10	0/10	N/A	151 bmp

Treatment

Strength Training (Example Circuits)

- Circuit A
  - A1 – TRX Squat
  - A2 – TRX Inclined Row
  - A3 – Quadruped Chin Tucks
  - A4 – Seated OH Press
- Circuit B
  - B1 – Band Assisted Hinge
  - B2 – Lat Pull down
  - B3 – ½ kneeling Anti-Rotation Iso
  - B4 – Wall Pushup

Treatment

Agility/ Plyometric

- Once patient is successful with Aerobic & Strength
- Advanced Exercise Prescription
- Dynamic nature of explosive movements and deceleration control
- Used as a pre screen for RPT testing

Sport Specific Drills

- Consider conditioning needs of the sport
- Consider dynamics of directional change, up and down from the ground
- Re-create the environment

Re-exam

- **VOMS Test**: Continued increase in dizziness to 2/10 with motion sensitivity.
- **Buffalo Treadmill Test**: unable to accurately assess 2/2 c/o shin splints
- **Progress Toward Goals**:
  - Patient will be increase DNF Endurance test to >/= 20 sec. (MET)
  - Decrease dizziness to </= 1/10 during VOMs test for VOR and motion sensitivity testing. (Partially Met)
  - Patient will be able to walk on treadmill at >/= 5% incline at 3.2 mph without any increased Sx's. (MET)
- **Plan**:
  - Continue to progress motion sensitivity habituation exercises and continues to progress graded exercise program

Discharge

VOMS Test

Vestibular/Occulomotor	Headache	Dizziness	Nausea	Fogginess	Comments
Baseline	0/10	0/10	0/10	0/10	
Smooth Pursuits	0/10	0/10	0/10	0/10	
Saccades- Horizontal	0/10	0/10	0/10	0/10	
Saccades- Vertical	0/10	0/10	0/10	0/10	
Convergence					1: 9 cm 2: 8 cm 3: 9 cm
VOR- Horizontal	0/10	0/10	0/10	0/10	
VOR- Vertical	0/10	0/10	0/10	0/10	
Visual Motion Sensitivity	0/10	0/10	0/10	0/10	

Discharge

Dr. Cantu Treadmill Test: Performed at 3.6 mph

Time	Incline	Headache	Diziness	Nausea	Fogginess	RPE	HR
Baseline		0/10	0/10	0/10	0/10	N/A	81 bpm
1 min	0 %	0/10	0/10	0/10	0/10	N/A	94 bpm
2 min	2 %	0/10	0/10	0/10	0/10	N/A	101 bpm
3 min	4 %	0/10	0/10	0/10	0/10	N/A	111 bpm
4 min	6 %	1/10	0/10	0/10	0/10	N/A	123 bpm
5 min	8 %	0/10	0/10	0/10	0/10	N/A	131 bpm
6 min	10 %	0/10	0/10	0/10	0/10	N/A	144 bpm
7 min	12 %	0/10	0/10	0/10	0/10	N/A	157 bpm

Discharge

Dr. Cantu Return to Activity Protocol

Drill	Reps	Headache	Dizziness	Nausea	Fogginess	Completed
Ladder Drill	2 Min	0/10	0/10	0/10	0/10	Yes
Push ups on knees	10 reps	0/10	0/10	0/10	0/10	Yes
Sit ups	10 reps	0/10	0/10	0/10	0/10	Yes
Box Jumps fwd	10 reps	0/10	0/10	0/10	0/10	Yes
Box Jumps lat	10 reps	0/10	0/10	0/10	0/10	Yes
180 deg. Turns	5 ea. direction	0/10	0/10	0/10	0/10	Yes
Burpees	10	0/10	0/10	0/10	0/10	Yes
Squat Press	10	0/10	0/10	0/10	0/10	Yes

Discharge

- Long Term Goals (to be achieved in 14-16 visits)
  - Patient will complete Buffalo Treadmill test and graded exercise program without any increase in sx's to permit return to soccer. (MET)
  - Patient will be able to complete the VOMs Test as prescribed with no sx's to permit sx free ADL's. (MET)
  - Patient will be independent with HEP for self management of symptoms and to further progress gains made in therapy. (MET)
- Plan: Follow up with Dr. Gilmore to further discuss ultimate plan for return to soccer.

Video

Follow Up
(11 months after concussion):

- Full academics doing well without accommodations beginning 9 months after concussion
- No concussion symptoms beginning 10 months after concussion
- Passed the Return to Activity (RTA) protocol
- Discharged from OT and SLP
- ImPACT repeated 8 months after concussion “average”, except for verbal memory composite “borderline” 8%
- Neurologic examination: normal
- BESS: 0/30

PLAN:

- 6-day Graduated Return to Play
- Program
- Sports Clearance Letter
- Discharged 11 months after concussion

Video

Questions

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